WHAT IS CLAIMED IS:

1. A method for producing a heat stable whey protein, the method comprising:

providing a solution of whey protein having free mineral ions;

adding an effective amount of a reagent to the whey protein wherein the reagent reacts with the free mineral ions and forms water-soluble compounds; and

filtering the water-soluble compounds from the whey protein to reduce the concentration of free mineral ions and form the heat stable whey protein.

2. The method of claim 1 and wherein the free mineral ions comprise calcium ions and magnesium ions.

3. The method of claim 1 and wherein the reagent comprises a chelating agent.

4. The method of claim 3 and wherein the chelating agent comprises a citrate ion.

5. The method of claim 3 and wherein the chelating agent comprises sodium citrate.

6. The method of claim 5 and wherein sodium citrate is added at a rate of between about 1 gram and 6 grams of sodium citrate per liter of whey protein.

7. The method of claim 1 and further comprising adjusting a pH of the whey protein concentrate and the reagent mixture to about neutral.

8. The method of claim 7 and wherein a hydroxide ion is added to adjust the pH of the whey protein concentrate and reagent mixture.

9. The method of claim 1 and further comprising heating the whey protein concentrate to about between about 150°F and 190°F prior to filtering the whey protein concentrate.

10. The method of claim 9 and further comprising maintaining the temperature of the whey protein concentrate at a temperature of between about 150°F 190°F for about between about one and three minutes prior to filtering the whey protein concentrate.

11. The method of claim 1 and wherein filtering comprises ultrafiltration.

12. The method of claim 11 and wherein filtering further comprises diafiltration.

13. The method of claim 1 and further including spray drying the filtered whey protein to form a whey protein concentrate.

14. A heat stable food product comprising an effective amount of whey protein produced by the method of claim 1 characterized by no precipitate retained when passed through a sieve having 212 micrometer openings.

15. The heat stable food product of claim 14 and wherein the food product is heated to between about 150°F and 250°F for up to 15 minutes.

16. The heat stable food product of claim 14 and wherein the heat stable food product includes up to 6 weight percent whey protein.

17. A heat stable whey protein produced by the method of claim 1 characterized by the whey protein's ability to not form a precipitate in a temperature range of between about 150°F and 250°F for up to 15 minutes.

18. A heat stable whey protein produced by the method of claim 1 characterized by the whey protein's ability to not form an aggregate in a temperature range of between about 150°F and 250°F for up to 15 minutes.

19. A heat stable whey protein produced by the method of claim 1 characterized by the whey protein's ability to not gel when added to a liquid when the liquid is heated in a temperature range of between about 150°F and 250°F for up to 15 minutes.

20. The heat stable whey protein of claim 19 wherein the heat stable whey protein is added to the solution in a concentration up to 6 weight percent.

21. A method of removing divalent minerals from whey protein solution, the method comprising:

mixing an effective amount of a reagent with the whey protein solution and wherein the reagent bonds with the divalent minerals to form water-soluble complexes within the whey protein solution; and

ultrafiltering the water-soluble complexes from the whey protein.

22. The method of claim 21 and wherein the reagent comprises a chelating agent.

23. The method of claim 22 and wherein the chelating agent comprises a citrate ion.

24. The method of claim 22 and wherein the chelating agent comprises sodium citrate.

25. The method of claim 24 and wherein the sodium citrate is added at a rate of about 1 to 6 grams of dry sodium citrate per liter of whey protein.

26. The method of claim 21 and further comprising adjusting a pH of the mixture of the reagent and the whey protein solution to about neutral prior to ultrafiltering the mixture.

27. The method of claim 26 and wherein a hydroxide ion is added to adjust the pH of the mixture.

28. The method of claim 21 and further comprising heating the mixture of the reagent and the whey protein solution to between about 150°F and 190°F prior to ultrafiltering the mixture.

29. The method of claim 28 and wherein the mixture is maintained at between about 150°F and 190°F for between about one and three minutes.

30. The method of claim 21 and further comprising diafiltering the water-soluble complexes from the whey protein solution after ultrafiltering the water-soluble complexes from the concentrated whey protein.

31. The method of claim 21 and further comprising spray drying the whey protein solution after the

water-soluble complexes are removed from the whey protein solution to form a whey protein concentrate.

32. A method of producing a heat stable whey protein suitable for use in foodstuffs for human consumption, the method comprising:

providing a whey protein solution having free divalent minerals;

adding an effective amount of a reagent to the whey protein solution and wherein the reagent forms water-soluble complexes with the free divalent minerals; and

ultrafiltering the water-soluble complexes from the whey protein solution wherein reducing the concentration of the free divalent minerals within the whey protein solution makes the whey protein solution heat stable for use in foodstuffs for human consumption.

33. The method of claim 32 wherein the reagent comprises a chelating agent.

34. The method of claim 33 and wherein the chelating agent comprises a citrate ion.

35. The method of claim 33 and wherein the chelating agent comprises sodium citrate.

36. The method of claim 35 and wherein citrate is added to the whey protein solution at a rate of between about 1 and 6 grams of sodium citrate per liter of solution.

37. The method of claim 32 and further comprising adjusting a pH of the mixture of the reagent and the whey protein solution to about neutral prior to ultrafiltering the mixture.

38. The method of claim 32 and further comprising heating the mixture of reagent and whey protein solution to between about 150°F and 190°F prior to ultrafiltering the mixture.

39. The method of claim 38 and wherein the mixture is maintained at between about 150°F and 190°F for between about one and three minutes.

40. The method of claim 32 and further comprising diafiltering the whey protein solution after ultrafiltering the whey protein.

41. The method of claim 32 and further comprising spray drying the ultrafiltered whey protein solution to form a whey protein concentrate.